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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/563,544

12/15/2006

Franz Josef Feikus

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BOSTON, MA 02110

EXAMINER

TAKEUCHI, YOSHITOSHI

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/563,544	Applicant(s) FEIKUS, FRANZ JOSEF	
	Examiner YOSHITOSHI TAKEUCHI	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>30 December 2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pellman et al (US 4,968,358) in view of Kemper (US 4,030,947).

a. Regarding claim **1, 6, 7, and 9**, Pellman teaches a method for heat treating cast parts produced from an aluminum melt (column 3, line 14), wherein the cast part is quenched after heat treatment (column 3, lines 17-18), after quenching is cooled to a low temperature (column 3, line 20) and following low temperature cooling is suddenly heated to a high temperature (column 3, lines 8-10 and 24-26) . Pellman teaches the uphill quench is effectuated through the use of heated fluorochemical vapor condensing on the alloy (abstract), with a maximum temperature below the temperature of artificial

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aging of the metal alloy to be treated (column 3, lines 24-26), but does not teach immersing the alloy in a salt melt, which has a temperature above the boiling temperature of water at normal pressure.

Kemper teaches method of heat treating aluminum (column 2, lines 1-10) immersed in a salt melt (column 2, lines 18-21, sodium nitrate and potassium nitrate) up to temperatures between 750 to 1000°F (398 to 537°C).

As a result, it would have been obvious to a person of ordinary skill at the time of the invention to use the salt baths, as taught by Kemper, as (1) an alternative means of heating for the uphill quench of Pellman, since salt baths are another means of heating the aluminum alloy and (2) a means of reaching higher temperatures than the fluorochemical vapor taught by Pellman, since Pellman taught that the uphill temperature can be up to just below the temperature of artificial aging.

b. Regarding claim **2**, Pellman in view of Kemper teaches the method of claim 1, where Pellman teaches water quenching (column 1, line 21).

c. Regarding claims **3** and **4**, Pellman in view of Kemper teaches the method of claim 1, where Pellman teaches using liquid nitrogen to stabilize the temperature of aluminum part (column 1, line 58), where the temperature of liquid nitrogen is -196°C. Also, immersion is a well known method of cooling a part to the temperature of the liquid coolant. As a result, it would have been obvious to a person of ordinary skill at the time of the invention to immerse the aluminum part into liquid nitrogen, since immersion is a well-known method of cooling a part and Pellman teaches cooling an aluminum part with liquid nitrogen, where immersion is contemplated by such disclosure.

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d. Regarding claim **5**, Pellman in view of Kemper teaches the method of claim 1, where Pellman teaches the method of uphill quenching, where the method of uphill quenching requires enough time at the low temperature until the aluminum part is substantially at a uniformly low temperature. (Column 1, lines 26-27).

e. Regarding claim **8**, Pellman in view of Kemper teaches the method of claim 1, and Kemper teaches the molten salt quenching media includes salts selected from sodium nitrate, potassium nitrate, sodium nitrite, potassium nitrite, sodium chloride, including a mixture of some or all of said salts (column 3, line 65 to column 4, line 2) and teaches the preferred embodiment would be a tertiary mixture of sodium nitrate, potassium nitrate and potassium or sodium nitrate, where the lowest melting eutectic contains no water and has a theoretical melting point of approximately 292°F.

As a result, it would have been obvious to a person of ordinary skill at the time of the invention to use a salt mix of 100% by weight in the uphill quenching process taught by Pellman because Kemper teaches a preferred salt bath is a tertiary system comprised of sodium nitrate, potassium nitrate and potassium or sodium nitrate and no water.

f. Regarding claims **10** and **11**, Pellman in view of Kemper teaches the intended use of the method of Pellman in view of Kemper. It would have been obvious to a person of ordinary skill at the time of the invention to apply the method of Pellman in view of Kemper to produce cylinder heads or motor units with expected success.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Uphill Quenching of Aluminum: Rebirth of a Little-Known Process, Tom Croucher,

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Heat Treating Journal, Oct. 1983, pp. 30-32 (regarding claim 5, Croucher teaches the quenching time is fundamental to the uphill quenching process and must be sufficiently long so that the article has a uniformly low temperature).

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOSHITOSHI TAKEUCHI whose telephone number is (571) 270-5828. The examiner can normally be reached on Monday-Thursday 9:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art Unit
1793

/YOSHITOSHI TAKEUCHI/
Examiner, Art Unit 1793